Polynomials
Monomials, Binomials and Trinomials

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What is a polynomial?

To answer this question we need to first understand what a "term" is. A **term** is something that looks like,

$$4x^2, 3x, 5, -x^4 \ \ etc.$$

There are two components to a **term**, the **coefficient** and the **variable**. The coefficient in the term $4x^2$ is 4 and the variable part is x^2. A **polynomial** is at least one term or the sum of any number of terms. Some examples of polynomials are,

$$3x^2 + 4x + 3$$
$$-5x + 3$$
$$6 + x^2$$

Monomials, binomials, trinomials, oh my!

A **monomial** is a polynomial with one term. For example,

$$3x^2, -4x, -7x^3$$

are some examples.
A **binomial** is a polynomial with two terms. For example,

$$4x + 2, x^2 - 6, x + 3x^2$$

are example of bionomials.
A **trinomial** is a polynomial with three terms. For example,

$$-2x^2 + 3x + 4$$
$$6x - 3 + 2x^2$$

are all trinomials.
We can add, subtact, multiply, divide and take powers of polynomials just as we can with numbers.

Exercises

Label each polynomial as a monomial, binomial, trinomial or polynomial for greater than trinomial.

a) $x^2 + 3x^4 - 3$

b) 6

c) $y^2 + 2$

d) $-3x^2 + 10x^9 + y^4 + 7$

e) $-44y + 22y^2 + 14$

f) $z^2 - z$

g) $x^3 + 2x^2 - x - 1$

h) $-\frac{1}{2}yx^2 + 4x$

i) $\pi y^3 + y^4 + y^2 + y - 1$

j) $-z^7 + 2z^6 - 3z^5$

k) $4x^2y^2 + 7y - 2 + x^7$

l) ab

m) $66a^2 + b^2 - ab + 15b$

n) $x^4y^7z^2$

o) $77x^2y^2z^2w^2$

p) $a^2 + 2ab + b^2$

q) $a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$

r) 0

s) $1 + x + x^2 + x^3 + x^4 + x^5$

t) $2x + x^2$

u) $a^{13} + a^{133} + a^{1333}$

v) y^{1000}

w) $z^2 + 2$

x) $3 - 4y$

y) x^{100001}

z) $y^5 + x^6 + z^6 + w^6 + a^6$